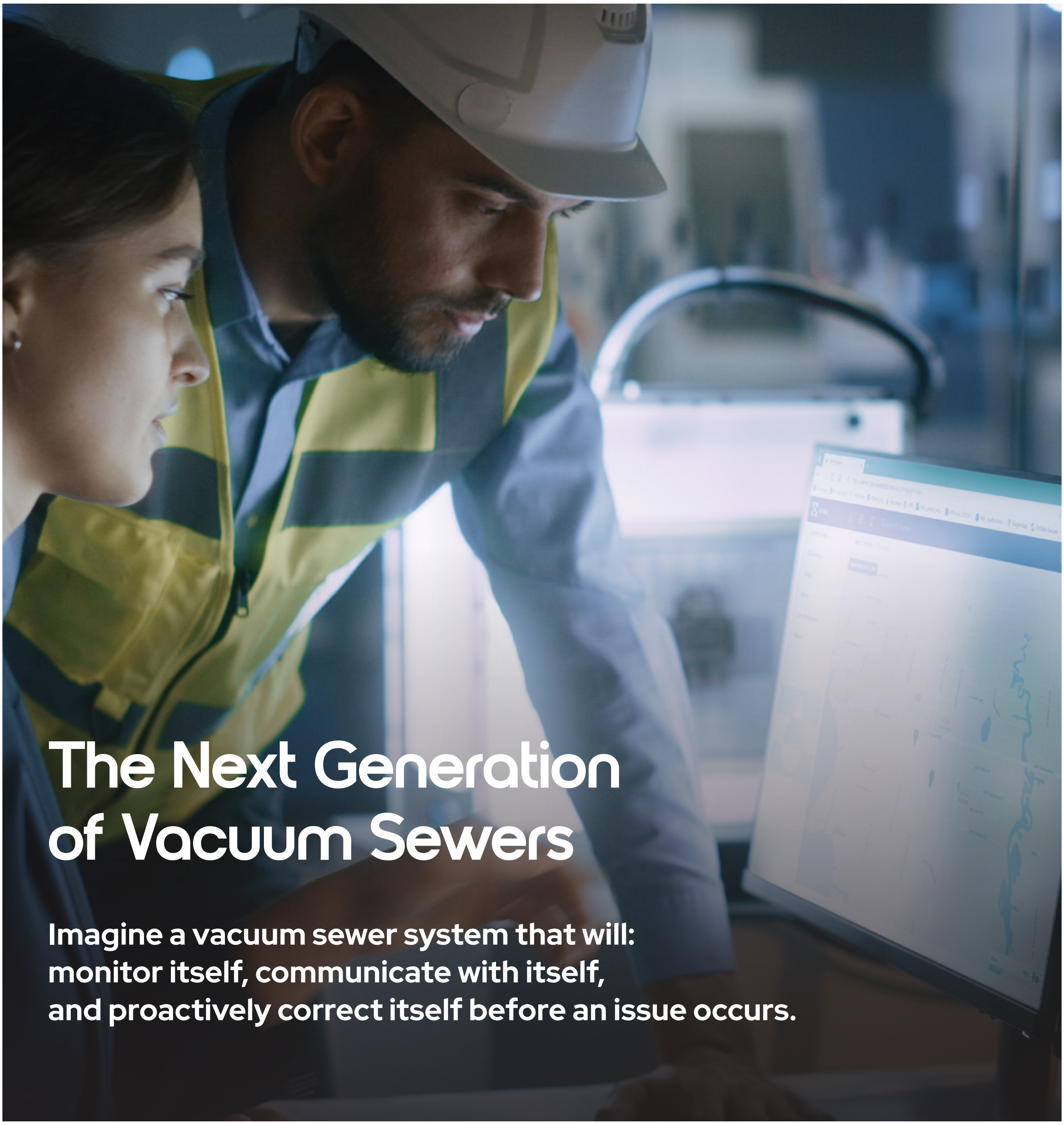
Airvac
Vacuum Technology Solutions

Industry Report



The Next Generation of Vacuum Sewers

**Imagine a vacuum sewer system that will:
monitor itself, communicate with itself,
and proactively correct itself before an issue occurs.**

In a world where technology is constantly advancing, even the most traditional systems are getting a futuristic makeover. One such transformation is happening in the realm of sewage management with the innovative NexGen vacuum technology systems. Imagine a sewage system that not only functions flawlessly but also monitors, communicates, and proactively corrects itself before issues arise. Meet Airvac's groundbreaking approach to sewage management, which integrates state-of-the-art technologies to create an efficient and sustainable solution.

Monitoring the Unseen

Vacuum sewer collection technology employs a network of underground pipes that transport wastewater from individual households or buildings to a central collection station. Instead of relying on gravity, as in traditional systems, vacuum technology utilizes air pressure differentials to move the wastewater. By creating a vacuum in the pipe network, the system effectively "sucks" the wastewater towards the collection station.

Airvac's wireless monitoring system is at the heart of this transformation. It employs LoRa (Long Range) technology to continuously track and identify trends and abnormal conditions in the vacuum sewer system. This real-time monitoring enables the system to adjust itself, ensuring it operates at peak performance levels. If any issue arises within the vacuum mains or at a valve pit, the monitoring system swiftly pinpoints the exact location and prescribes the necessary adjustments.

The Airvac's monitoring system is no ordinary observer; it tracks vital parameters, including vacuum levels, valve status, high sump levels, system trends, cycles, cycle times, and any instances of infiltration. This comprehensive oversight ensures that the vacuum sewer system operates smoothly and minimizes the chances of potential problems.

System Monitoring Features Side-by-Side Comparison

	Airvac	Industry Standard
System Connections		
LoRa Modules	✓	✓
Cloud Data Storage	✓	✓
Scada Connectivity	✓	✓
Main Gateways	✓	✓
Remote Gateways	✓	✓
Magnet Activated Sensors	✓	✓
Sump Float	✓	✓
Vacuum Station Control Panels	✓	✓

Types of Reporting		
Vacuum Levels	✓	✓
Valve Status	✓	✓
Sump Level High	✓	✓
System Trends	✓	✓
Cycles, Cycle Time	✓	✓
Infiltration	✓	✓
NexGen		
Dedicated Ports	✓	
Modulation	✓	
S.M.A.R.T. Technology	✓	
Two-Way Communication	✓	✓
Interactive e-Cabinets	✓	
No Magnets or Floats Required	✓	

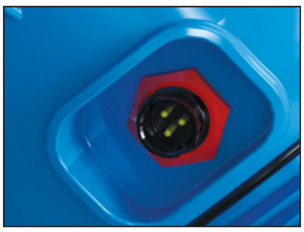
Efficiency Through Innovation

One of the key innovations introduced by Airvac is the integration of dedicated ports into the vacuum valve and sump breather. These dedicated ports facilitate quick and easy connections for monitoring cables. Unlike older models, the newer vacuum valves don't rely on magnets or floats, significantly reducing the risk of failure due to misalignment, switch malfunction, or debris buildup.

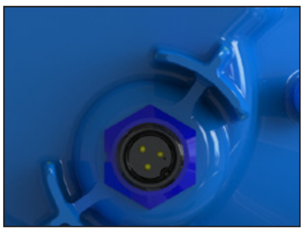
The monitoring system also replaces traditional float-based sump level monitoring with a diaphragm breather. This modern approach minimizes the chances of failure due to floats getting stuck or entangled with internal wiring. However, Airvac continues to provide magnet switches and floats for older systems, ensuring backward compatibility.

Two-Way Communication for Enhanced Control

Airvac takes control to the next level with its two-way communication system. Operators can remotely cycle vacuum valves, enhancing flexibility and responsiveness. When paired with Airvac's S.M.A.R.T. (Strategic Monitoring for Advanced Remote Transfer) system, artificial intelligence takes over, automatically activating vacuum pumps and valves in the event of an imbalance. This two-way communication not only offers convenience but also ensures a swift response to maintain system issues.



Vacuum Valve
Dedicated Port



Diaphragm Breather
Dedicated Port

S.M.A.R.T. Technology: A Game Changer

Airvac's patented S.M.A.R.T. system redefines how vacuum sewer systems operate. It's not just a monitor; it's an intelligent operator. This technology predicts and proactively corrects potential issues in real-time, optimizing system hydraulics and reducing operation and maintenance costs.

S.M.A.R.T. offers various benefits, including:

- **Predictive and proactive adjustments to prevent problems.**
- **Increased system efficiency through easy correction of imbalances.**
- **24/7 real-time monitoring by Airvac specialists.**
- **Built-in purge cycle to prepare for high flow events.**
- **Remote programming updates to keep S.M.A.R.T. current and effective.**

Dedicated ports connect quickly and easily to the LoRa radio unit.

Interactive eCabinet: Real-Time Insights

This revolutionary addition offers a "real-time" assessment of the vacuum sewer system. Gone are the days of on-site data collection and analysis. The interactive eCabinet provides key performance indicators in real-time right at the control panel.

Custom-designed by Airvac's expert engineers, the interactive eCabinet offers system information, including a preventative maintenance log, a pump oil life calculator, modulation information and parameters, sewage pump efficiency data, the system air-to-liquid ratio, and even preventative maintenance and troubleshooting tutorial videos. This real-time insight empowers operators with the information they need to ensure the system operates at its best.

The Interactive eCabinet is located on the front of the vacuum station control panel.

Conclusion:

The future of sewage management is here, and Airvac is at the forefront, seamlessly blending cutting-edge technologies to create a more efficient, cost-effective, and sustainable solution. With wireless monitoring, two-way communication, AI-driven control, and real-time insights, the vacuum sewer system is no longer a mundane infrastructure but a marvel of modern engineering. Airvac's commitment to innovation ensures that the sanitation systems of the future will be cleaner, smarter, and more reliable than ever before.

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